Temperature Recorder employs a DS1620 transducer and an AT89C1051 RISC microcontroller to record and storing temperature values. The microcontroller effectively connects the transducer to the serial port (RS-232) on your PC.

software.available.on.cd-rom

PC software '98-'99

By John Th. Kokkori

temperature recorder

First Prize, UK national entries

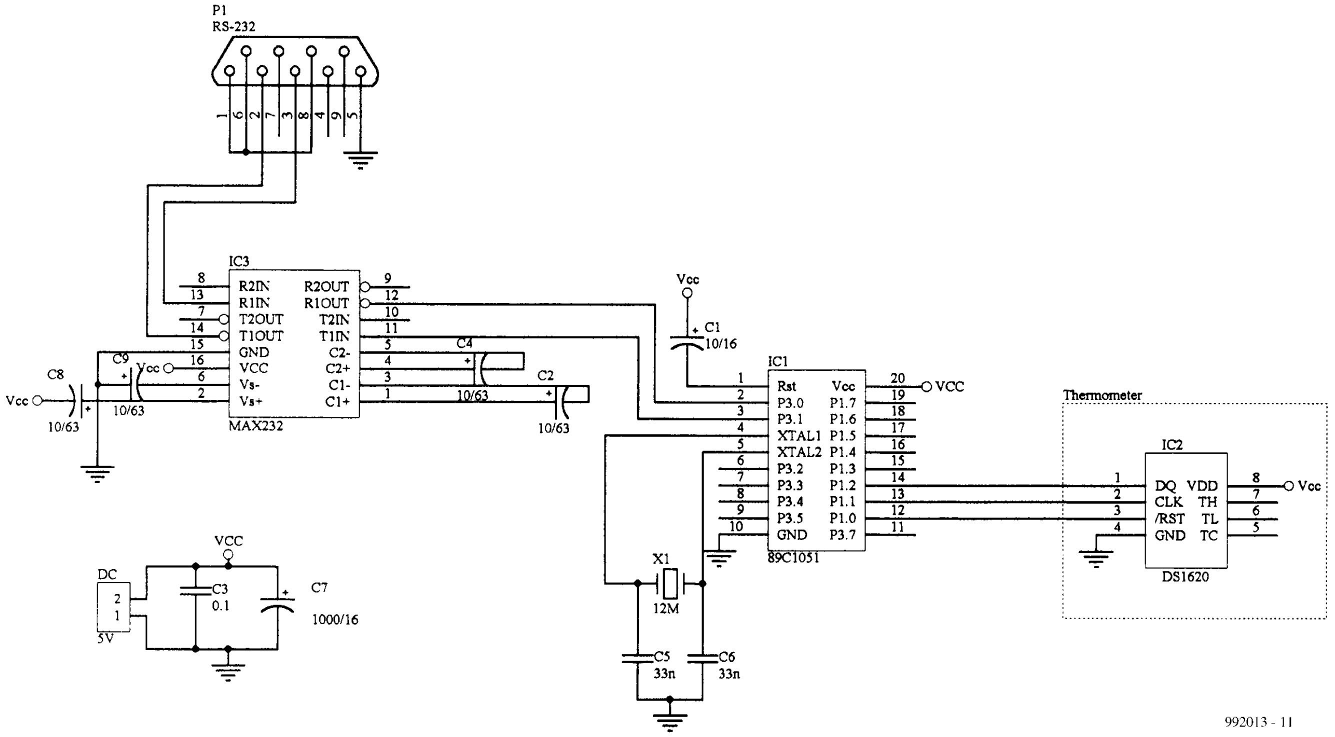


Figure 1. Circuit diagram of the intelligent interface and its connection to the PC's serial port.

Thanks to an Atmel 89C1051 controller in the purpose-designed interface shown in **Figure 1**, the system is capable of performing temperature readings and storing measured values while the PC is off. Also, the actual thermometer may be located at quite some distance from the host PC. The PC, when switched on, may request the temperature readings from the interface, and use them to display a temperature graph. The interface is built on a small printed circuit board as shown in **Figure 2**.

Program description

Temperature Recorder is a Win95/98/NT application written in Visual Basic 5. This program allows you to select the COM Port to which the thermometer is connected, as well as define the value of parameter 'RATE' which is the interval between two temperature readings. This is defined by the equation

TIME = (RATE + 1)*30 [seconds]

For example, if RATE is 0, the sampling interval is 30 seconds, and if RATE is 19 the interval is 10 minutes.

Using 'Read Buffer Data' you can prompt the microcontroller to transmit its buffer contents to the PC. Before you start the transfer you should enter, in the 'Filename' field, the name of the file which is to contain the temperature readings (see **Figure 3**). Alternatively, or you can choose an existing file by clicking on 'File' and then 'Select File ...'. Having selected the file you may press the 'Start' button, whereupon the discrete temperature values will be written into the file. You will also see the time, date and the value of the last temperature reading. If you press the ‘Show Graph’ button the system presents a graphic display of the measurement results.

Installing the program

To install the program you simply run the ‘Setup’ file.
If you have a different version of Visual Basic installed on your PC you may have a problem with the installation. In that case, do not stop the installation. Once Setup has finished, copy all files, **except** ‘Vbctrls.reg’ from the disk ‘Temp_Rec / PATCH’, to the Windows system directory, then run the file ‘Vbctrls.reg’ from the ‘Temp_Rec / PATCH’ disk. This will update the relevant files in the system directory, and the program should then work.

All files available!

The software as supplied for the *Elektor Electronics Software Design Contest* includes all the source codes for the Temp_Rec Program (in V.Basic 5), the asm, hex files for the microcontroller and the PCB artwork and schematic files (Protel files and image files) for the thermometer.
All software components as supplied by the author may be found on a CD-ROM containing winning entries from the 1998 Software Design Contest. This CD-ROM will be available early January 1999.

992013-1

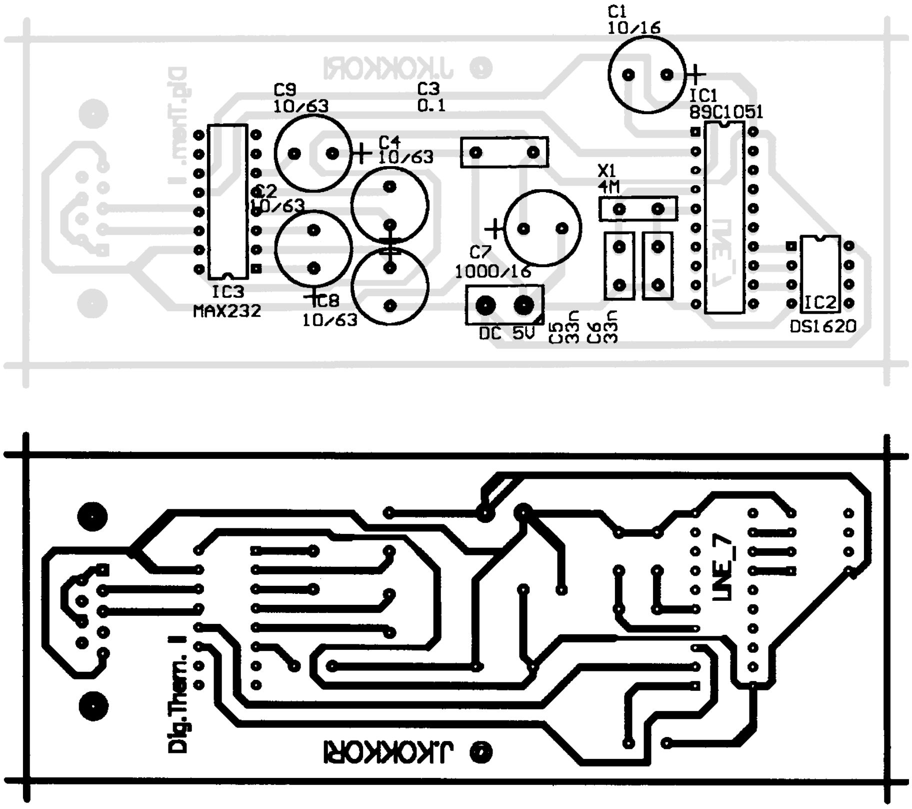
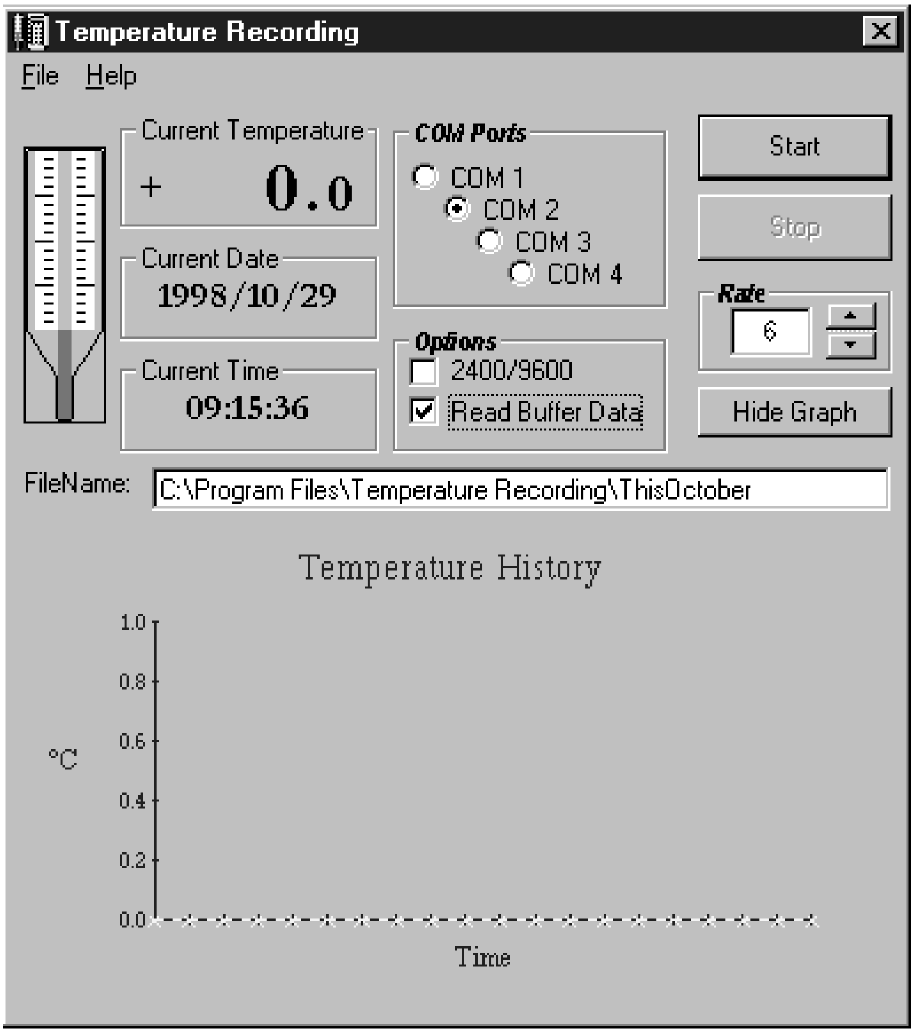


Figure 2. PCB artwork as supplied by the author.



Current Temperature: + 0.0

Current Date: 1998/10/29

Current Time: 09:15:36

COM Ports: ○ COM 1 ● COM 2 ○ COM 3 ○ COM 4

Options: ☐ 2400/9600 ☑ Read Buffer Data

Rate: 6

FileName: C:\Program Files\Temperature Recording\ThisOctober

Figure 3. Screendump showing Temperature Recorder in action.